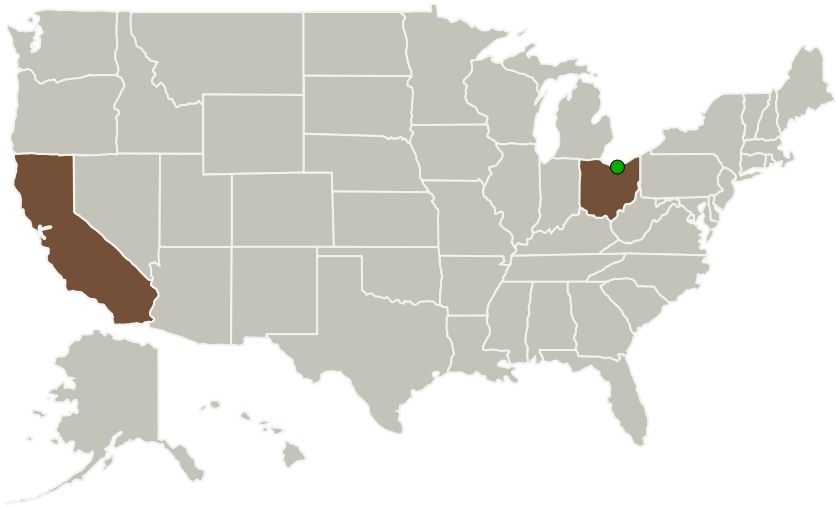
Affordable Practical High-Efficiency Photovoltaic Concentrator Blanket Assembly for Ultra-Lightweight Solar Arrays, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

Deployable Space Systems, Inc. (DSS) will focus the proposed NASA Phase 1 effort on the development of our innovative Functional Advanced Concentrator Technology (FACT). FACT is an affordable practical high-efficiency concentrator blanket assembly for ultra-lightweight solar arrays. FACT coupled to an ultra-lightweight solar array structural platform (such as DSS's ROSA) will provide game-changing performance metrics and unparalleled affordability for the end-user. FACT will enable emerging Solar Electric Propulsion (SEP) Space Science missions, and other NASA missions, through its ultra-affordability, high voltage operation capability, high/low temperature operation capability, high/low illumination operation capability, high radiation tolerance, ultra-lightweight, and ultra-compact stowage volume. Once completely optimized through the proposed Phase 1 and Phase 2 programs the FACT technology promises to provide NASA/industry a near-term and low-risk flexible blanket technology for advanced solar array systems that provides revolutionary performance in terms of high specific power / ultra-lightweight (>400-500 W/kg BOL at the array level & >1000 W/kg BOL at the blanket level, PV dependent), affordability (>50% cost savings at the array level), compact stowage volume (>80 kW/m3 BOL, 10X times better than current rigid panel arrays), high operation reliability, high radiation tolerance, high voltage operation capability (>150 VDC), scalability, and LILT & HIHT operation capability.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Deployable Space Systems, Inc(DSS)	Lead Organization	Industry	Goleta, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140208)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Deployable Space Systems, Inc (DSS)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Brian R Spence

Co-Investigator:

Brian Spence

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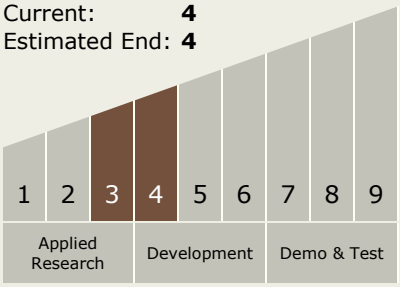
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System